CLAIMS

1. A concentration measuring method comprising: selecting a calibration curve optimum for computing concentration of a measurement target substance from a plurality of calibration curves based on an output from a reaction system containing the target substance and a reactant capable of reacting with the target substance; and computing the concentration of the target substance based on the optimum calibration curve and the output;

wherein each of the calibration curves is prepared based on a plurality of outputs generated upon lapse of a same reaction time from a plurality of standard reaction systems each containing a standard reagent of a known different concentration and the reactant; and

wherein the plurality of calibration curves differ from each other in reaction time based on which the calibration curves are prepared.

2. The concentration measuring method according to claim 1, wherein the plurality of calibration curves include a first calibration curve to be selected when the concentration of the target substance is predicted to be higher than a predetermined concentration threshold, and a second calibration curve to be selected when the concentration of the target substance is predicted to be lower than the concentration threshold;

wherein the first calibration curve is prepared based on an output measured in an initial stage of the reaction between a standard substance of a known concentration and the reactant; and

wherein the second calibration curve is prepared based on an output measured after the output as the base for the preparation of the first calibration curve is measured.

3. The concentration measuring method according to claim 2, further comprising the steps of: computing a second concentration by using the second calibration curve, comparing the second concentration with a first concentration computed by using the first calibration curve when the second concentrationis predicted to be higher than the concentration threshold, and adopting a higher one of the first and second concentrations as a conclusive computation value.

4. The concentration measuring method according to claim 2, further comprising the steps of: computing a second concentration by using the second calibration curve for determining whether or not the second concentration reflects the concentration of the target substance when the second concentration is predicted to be lower than the concentration threshold;

adopting the second concentration as a conclusive computation value when the second concentration reflects the concentration of the target substance; and

computing a first concentration by using the first calibration curve for adopting the first concentration as a conclusive computation value when the second concentration does not reflect the concentration of the target substance.

5. The concentration measuring method according to claim 2, further comprising the steps of: computing a first concentration by using the first calibration curve for adopting the first concentration as a conclusive computation value when the first concentration is predicted to be higher than the concentration threshold; and

computing a second concentration by using the second calibration curve for adopting the second concentration as a conclusive computation value when the first concentration is predicted to be lower than the concentration threshold.

6. The concentration measuring method according to claim 2, wherein whether the concentration of the target substance is higher or lower than the concentration threshold is predicted based on whether or not the output is higher than a predetermined output threshold.

7. The concentration measuring method according to claim 2, wherein the concentration threshold is set to lie in a concentration range in which the second calibration curve has high linearity.

8. The concentration measuring method according to claim 2, wherein the concentration threshold is set to a concentration corresponding to an intersection of the first calibration curve and the second calibration curve.

9. The concentration measuring method according to claim 1, wherein the plurality of calibration curves are prepared by measuring, at a plurality of measurement time points, outputs from the plurality of standard reaction systems each containing a standard reagent of a known different concentration and the reactant, each of the calibration curves corresponding to a respective one of the measurement points; and

wherein the selection of the optimum calibration curve is performed based on an output measured in a time period in which the reaction between the target substance and the reactant is in an initial stage.

10. The concentration measuring method according to claim 1, wherein the output is an optical response obtained when the reaction system is irradiated with light.

11. A concentration measuring method for computing concentration of a measurement target substance based on an output from a reaction system containing the target substance and a reactant capable of reacting with the target substance, and a calibration curve showing a relationship between the concentration of the target substance and the output;

wherein the calibration curve is prepared by performing time-wise measurement, in a predetermined time period, of outputs from a plurality of standard reaction systems each containing a standard reagent of a known different concentration and the reactant, and collecting a set of maximum outputs for the respective reaction systems.

12. The concentration measuring method according to claim 11, wherein the output is an optical response obtained when the reaction system is irradiated with light.

13. A concentration measuring method for computing concentration of a measurement target substance based on an output from a reaction system containing the target substance and a reactant capable of reacting with the target substance, and a specific calibration curve showing a relationship between the concentration of the target substance and the output;

wherein the specific calibration curve is prepared as a composite of a first calibration curve and a second calibration curve, the first calibration curve being prepared based on an output measured in an initial stage of the reaction between a standard substance of a known concentration and the reactant, the second calibration curve being prepared based on an output measured after the output as the base for the preparation of the first calibration curve is measured; and

wherein the specific calibration curve comprises a higher concentration portion for a concentration range higher than

an intersection concentration which corresponds to an intersection of the first calibration curve and the second calibration curve, and a lower concentration portion for a concentration range lower than the intersection concentration, the higher concentration portion comprising a portion of the second calibration curve for a concentration range higher than the intersection concentration, the lower concentration portion comprising a portion of the first calibration curve for a concentration range lower than the intersection concentration.

14. The concentration measuring method according to claim 13, wherein the output is an optical response obtained when the reaction system is irradiated with light.